



IN THE CLAIMS:

The status of the claims is as follows:

1. (Currently Amended) A solid state device comprising:

a first material;

a second material;

a barrier layer formed between the first material and the second material to prevent diffusion between the first material and the second material, the barrier layer includes a thermodynamically stable hexagonal close packed metal crystalline form of at least one of Ru and Re.

2. (Cancelled)

3. (Original) The device as recited in claim 1, wherein the first material is a dielectric and the second material is a metal.

4. (Original) The device as recited in claim 1, wherein the first material is a conductor and the second material is a metal.

5. (Original) The device as recited in claim 1, wherein the first material includes copper.

6. (Original) The device as recited in claim 1, wherein the metal form includes a single

metallic phase in a temperature range of between about 300 degrees C and about 550 degrees C.

7. (Original) The device as recited in claim 1, wherein the metal form includes a single metallic phase in a temperature range of between about 300 degrees C and about 900 degrees C.

8. (Original) The device as recited in claim 1, wherein device is a semiconductor device and the first material includes a semiconductor material.

9. (Original) The device as recited in claim 1, wherein the barrier layer includes a thickness of 700 Angstroms or less.

10-20. (Cancelled)

21. (Currently Amended) A solid state device comprising:
a first material;
a second material;
a barrier layer formed between the first material and the second material to prevent diffusion between the first material and the second material, the barrier layer includes a thermodynamically stable hexagonal close packed metal crystalline form of Ru.

22. (Currently Amended) A solid state device comprising:
a first material;
a second material;

a barrier layer formed between the first material and the second material to prevent diffusion between the first material and the second material, the barrier layer includes a thermodynamically stable hexagonal close packed metal crystalline form of Re.

23. (Currently Amended) A solid state device comprising:

a first material;

a second material;

a barrier layer formed between the first material and the second material to prevent diffusion between the first material and the second material, the barrier layer including a thermodynamically stable hexagonal close packed metal crystalline having a hexagonal close packed structure having a thickness of 700 Angstroms or less and formed of at least one of Ru and Re, wherein the metal form includes a single metallic phase formed in a temperature range of between about 300 degrees C and about 550 degrees C.

24. (Original) The device as recited in claim 23, wherein the first material is a dielectric and the second material is a metal.

25. (Original) The device as recited in claim 23, wherein the first material is a conductor and the second material is a metal.

26. (Original) The device as recited in claim 23, wherein the first material includes copper.

27. (Original) The device as recited in claim 23, wherein device is a semiconductor device and the first material includes a semiconductor material.